

Statement of Substance of Examiner Interview

Under 37 CFR 1.133

A telephonic Examiner interview between Examiner Saif A. Alhija and Applicant's counsel, Mark Farrell Reg. No. 45,988, was held on June 1, 2011 at 3:00pm EDT.

Proposed amendments for the pending claims were faxed to the Examiner ahead of time, and Claim 2 from the fax document was discussed, as an example representative claim.

Applicant pointed out (from paragraph [0047] of the specification) that a large oilfield often comprises a number of independent, isolated reservoirs. By history, these may have been matched individually with their own respective simulation models, depending on what year each began to be modeled and what software was in vogue at each time. To produce these into a common surface facility, they can no longer be regarded as independent units for purposes of prediction studies. The ability to simulate the reservoirs as a coupled system while retaining their individual model descriptions is a distinct advantage to the engineer.

Applicant submitted that the claimed controller allows different parts of an oilfield, modeled by different software programs -- perhaps from different eras, using different fluid models, and also using different time step schemes -- to each be coupled to the controller and run as part of a "mega-simulation" of an entire oilfield, without replacing or updating the various types of individual simulations and models that may be present across a multi-reservoir oilfield, including surface network model(s) and simulation(s).

Thus, the claimed controller does not demand a pre-existing simulation/simulator to be conformed to a single overall 3D grid model running at the controller. Rather, the controller allows each simulation/simulator that may be present across the oilfield to continue functioning as it always has, i.e., to function using its own type of model on its own 3D grid model of its part of the oilfield. In contrast to conventional techniques for coupling reservoir simulations, the claimed controller **couples with simulators running different fluid models** (black oil, compositional): and in doing so, balances fluid parameters, pressures, etc, as the run-time simulation of all these coupled simulators progresses; and *the controller includes the coupling algorithms within itself* (rather than requiring some modification in simulators being coupled).

The controller also selects a time step size to use for progressing the simulation, *which it may vary to suit circumstances*, allowing the participating simulators to execute their own size and number of time steps, within the overall time step of the controller.

Applicant also pointed out, in the same vein, that the controller typically runs multiple diverse reservoir simulations and a surface network simulation as *slave processes* to itself, emphasizing that the diverse multiple simulations being coupled remain independent in their execution, while exchanging information with the controller (as opposed to conventional reservoir coupling, in which reservoir simulators may be slave to *another reservoir simulator* that is selected to be master -- not to a controller).

No agreement was reached on the claims, until the Examiner can consider the amendments and supporting remarks in detail, when Applicant files this Response.

(End of Statement of Substance of Examiner Interview)